

## ***Yania* gen. nov. and *Yania sinica* sp. nov. from Sichuan, China (Lepidoptera: Hesperiidae)**

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**Abstract.** *Yania* gen. nov. and *Yania sinica* sp. nov. (Hesperiidae) are described from Sichuan, China. *Yania* can be placed in the *Ancistrodes* group of the Hesperiidae and can be distinguished from all the known genera of this group by the following combination of characters: 1) club of antennae very gradually marked, 2) both wings with vein 5 nearer to vein 4 than to vein 6, 3) without secondary sexual characters, 4) forewing with vein 2 nearer to wing-base than to vein 3, 5) male genitalia with uncus deeply bifid, uncus longer than tegumen, and 6) the clasp a very simple structure.

The new species described here was recognized when I sorted the butterflies I collected from Qingchenshan, Sichuan during the summer of 1991. Most specimens from the Qingchenshan Mountains were somewhat damaged when captured or when spread. Consequently, the unique holotype of this new species lost its labial palpi and the antennae are broken at the tip (one broken below the apiculus). However, its wing venation, genital structure, and other features indicate that it belongs to a new genus.

***Yania* Huang, new genus**  
Type species *Yania sinica* Huang

### **Male**

**Antennae.** Half as long as costa; club very gradually marked, not constricted before apiculus.

**Body.** Thin, weak; abdomen slightly longer than dorsum of hindwing.

**Forewing.** No prominent hyaline spots. Dorsum quite longer than termin. Vein 2 arising before the origin of vein 11 and nearer to wing-base than to the origin of vein 3. Vein 5 slightly closer to vein 4 than to vein 6 at its origin. Vein 11 originates midway between veins 10 and 12.

**Hindwing.** Costa slightly longer than dorsum. Discocellular cell slightly shorter than half the length of hindwing. Vein 7 arising beyond the origin of vein 2. Vein 5 well defined, not oblique and very slightly closer to vein 4 than to vein 6 at origin.

**Secondary sexual characters.** Absent.

**Male genitalia.** Uncus much longer than tegumen and deeply bifid. Gnathos slightly shorter than uncus. Saccus significantly longer than

tegumen and sharply pointed at tip. Clasp very simple in structure, without a style from valva or harpe.

**Etymology.** The name *Yania* is a feminine noun based upon the given name of my younger sister, Yan Huang.

***Yania sinica* Huang, new species (Figs. 1–6)**

**Male.** Eyes smooth and blackish brown when dried. Frons nearly twice as wide as eye, densely clad with black hairs mixed with some yellow.

**Labial palpus.** Unknown (both palpi missing from the holotype).

**Antennae.** 9.5 mm long (about half the length of forewing); club weakly and gradually marked, segments becoming broader on apical  $\frac{1}{3}$  of antennae with the thickest portion only twice as thick as shaft; club densely clad with blackish scales as well as shaft on upperside, but with pale yellow scales on underside in contrast with shaft; number of nudum segments in the apiculus unknown as the apiculus is broken at the tip, the remaining nudum segments all in bent-over portion of club, and club not constricted before apiculus (Fig. 3).

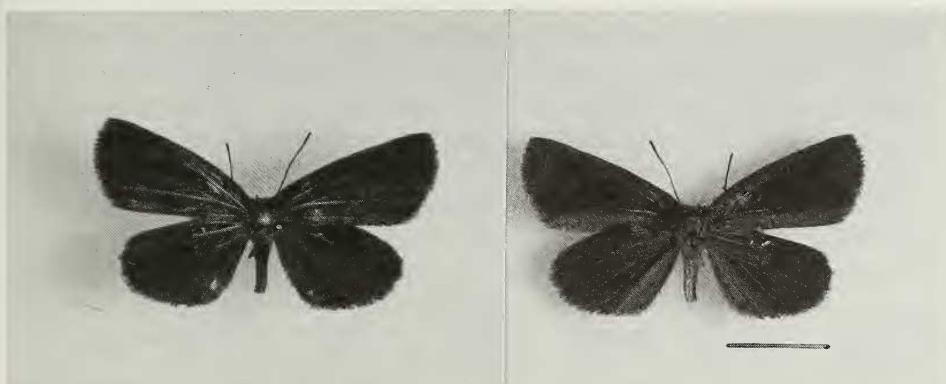
**Thorax.** Clad with darker brown scales and scattered long yellow hairs.

**Abdomen.** Thin and weak, slightly longer than dorsum of hindwing, densely clad with dark brown scales above, but with longer yellow and brown scales beneath mixed with scattered yellow hairs.

**Legs** (Fig. 4). Densely covered with dark brown scales above, yellowish scales beneath; fore and mid femora not apparently clad with hairs, hind femora densely clad with long yellowish hairs beneath; tibial epiphysis reddish, wicker-leaf-shaped and somewhat distorted, nearly  $\frac{1}{3}$  times as wide as fore tibiae, originating from the basal  $\frac{2}{3}$  of fore tibiae and surrounded with long yellow and black scales; all tibiae without spines or hair-brushes, only sparsely clad with few long yellow hairs; mid tibiae with terminal pair of spurs which are densely clad with brown scales and blunt at tip, the inner one (just on the inside of tibiae) slightly longer than the outer; hind tibiae with two pairs of spurs, the upper pair somewhat shorter than the lower; all tarsi clad with three rows of reddish spines below, which are as long as the scales on tarsi, without any hairs; claws as in *Astictopterus jama*.

**Wing markings.** Ciliae of both wings on both sides dark brown, concolorous with ground color of wings. Upperside: Both wings unmarked, uniform dark brown in color, without secondary sexual characters. Veins not marked in color. Underside: Both wings ground color dark brown as on upperside, with a yellowish cast. Some veins thinly clad with yellow scales. Costal and apical areas of forewing and basal half of hindwing sparsely clad with scattered yellow scales. Posterior marginal areas of both wings somewhat paler than other areas in color, otherwise as upperside.

**Wing shape and wing venation** (Fig. 5). Forewing. Length: 19.5 mm. Dorsum quite longer than termin. Vein 2 much closer to wing base than to vein 3 at its origin. Vein 5 slightly closer to wing base than to vein 3 at its origin. Vein 5 slightly closer to vein 4 than to vein 6 at its origin. Vein 11 beyond



Figs. 1-2. *Yania sinica* ♂ holotype. 1) Left: upperside. 2) Right: underside. Scale 1 cm.

vein 2 at origin and about midway between veins 10 and 12. Hindwing. Costa slightly longer than either termin or dorsum. Vein 5 well marked, not oblique, very slightly closer to vein 4 than to vein 6 at its origin. Vein 7 midway between veins 2 and 3 at origin.

**Male genitalia** (Fig. 6). Uncus nearly twice as long as tegumen, deeply bifid in dorsal view, its two arms running parallel with each other. Gnathos significantly longer than tegumen, nearly as long as the uncus arms. Saccus also long and sharply pointed at tip in both dorsal and lateral views. Clasp nearly rectangular in shape, with distal margin nearly plain and flat, only bearing a small tooth in the middle, posterior angle well produced, with a sharply pointed process. Juxta as *Ancistroides nigrita*. Aedeagus nearly as long as clasp, without cornuti, its suprazonal portion nearly as long as subzonal portion.

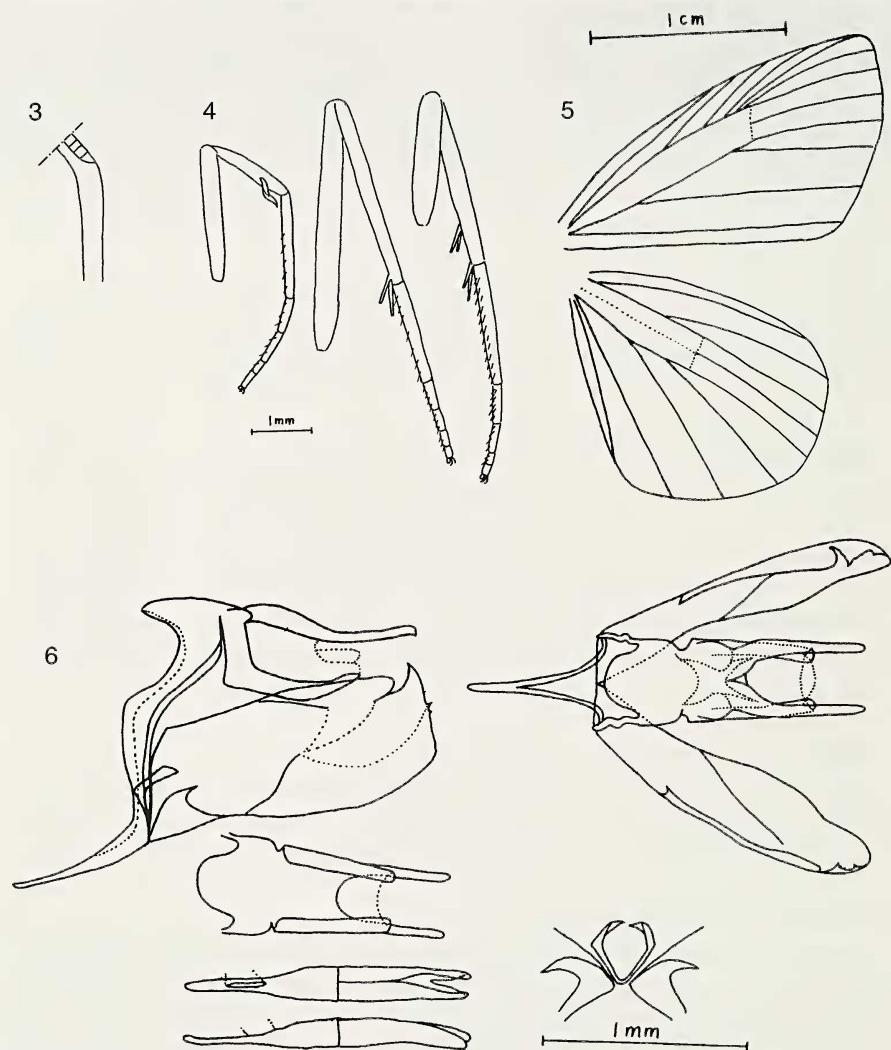
**Female.** Unknown.

**Type data.** Holotype: ♂ (Figs. 1, 2). Qingchengshan, Sichuan, China, 1500m. 12.VII. 1991. Leg. H. Huang. Deposited in the Biological Laboratory of Qingdao Education College, Qingdao, Shandong Province, China.

## DIAGNOSIS AND DISCUSSION

*Yania* clearly belongs in the subfamily Hesperiinae by exhibiting a hind tibia without erectile hair tufts, an abdomen without specialized scales, and a forewing lacking a costal fold. According to W.H. Evans (1949:2-4), Hesperiinae is composed of eight generic groups: *Heteropterus*, *Astictopterus*, *Isoteinon*, *Ancistroides*, *Plastigia*, *Hesperia*, *Taractrocera*, and *Gegenes*. *Yania* can be distinguished immediately from the *Hesperia*, *Taractrocera*, and *Gegenes* groups by an antennal club that is not constricted before the apiculus and by a hindwing vein 5 that is well marked. *Yania* is differentiated from the *Heteropterus* group in having the hindwing cell less than half the wing length, antennae not short and legs normal (fore tibia with prominent epiphysis, mid tibia not spined, and hind tibia with prominent upper spurs). *Yania* is distinct from *Plastigia* with hindwing vein 5 closer to vein 4 than 6 and its

wings not obviously produced. *Yania* differs from the *Isoateinon* group with the hindwing median vein not co-linear with vein 4 and vein 2 before the origin of vein 7. It would be difficult to infer to which of the remaining groups, *Astictopterus* or *Ancistroides*, *Yania* is most closely related since Evans only used the state of the second palpus segment — erect or porrect — as



- Fig. 3. Antennae of *Yania sinica*.  
 Fig. 4. Legs of *Yania sinica* (left to right): fore leg, mid leg, hind leg.  
 Fig. 5. Wing venation of *Yania sinica*.  
 Fig. 6. Male genitalia of *Yania sinica* consisting of lateral view of genital capsule with left valva and aedeagus removed; dorsal view of genital capsule with juxta and aedeagus removed; ventral view of gnathos and uncus; dorsal view of aedeagus; lateral view of aedeagus; and juxta in posterior view.

the key for separation (palps of the unique holotype of *Yania sinica* are missing). However, Eliot (in Corbet & Pendlebury 1992:363) questioned the taxonomic value of palpi and rearranged the Hesperiinae accordingly. The *Astictopterus* group was suppressed, the *Ampittia* and *Hesperia* subgroups placed into the *Halpe* group, and the genera *Astictopterus* and *Arnetta* placed into the *Astictopterus* and *Plastingia* groups respectively. The latter rationale is provided by wing venation and male genitalic character states. The *Halpe* group differs from the *Ancistroides* group of Eliot (including *Astictopterus*) in that forewing vein 2 arises opposite or beyond the origin of vein 11 and the uncus of the male genitalia is broader in dorsal aspect. It follows then that *Yania* be placed in the *Ancistroides* group of Eliot which comprises eight Asian genera: *Iambrix*, *Idmon*, *Koruthaialos*, *Psolos*, *Astictopterus*, *Ancistroides*, *Notocrypta*, and *Udaspes*.

The phylogenetic relationships between *Yania* and these eight genera are of interest. According to Eliot's key, mainly based on wing venation and wing markings, *Yania* can be distinguished from *Notocrypta* and *Udaspes* in the first dichotomy by a forewing without large hyaline spots; from *Iambrix*, *Idmon*, *Koruthaialos*, and *Psolos* in the second dichotomy by both wings having vein 5 downcurved at its origin and closer to vein 4 than vein 6; from *Astictopterus* in the third dichotomy by forewing vein 11 about midway between veins 10 and 12; leaving *Ancistroides* the closest allied genus to *Yania*. However, *Yania* shares other characters which appear as important as veins 5 and 11 for generic classification. These include body aspect and the hindwing dorsum shorter than the costa, which place *Yania* closest to *Astictopterus* and differing from the other seven genera. With the forewing vein 2 closer to the wing base than to vein 3 at its origin, *Yania* resembles *Notocrypta* and *Udaspes*. With regard to male genitalia the most important character for determination of generic classification appears to be the degree to which the clasp is specialized. Secondary characters are relative length of the uncus to the tegumen, length and shape of the gnathos, and least important the shape of the uncus. I propose this hierarchy from experience with treatment of the well defined subgeneric groups. Thus, within the *Halpe* group, all genera can clearly be placed into two subgroups by specialization of the clasp: the *Halpe* subgroup has the cuiller of the clasp longer and more complex (usually with heavy and branching teeth) than in the *Ampittia* subgroup.

Although the shape of the uncus is variable within related genera, the character is usually stable within a single genus. The relative length of the uncus to the tegumen is of greater suprageneric value than uncus shape alone. For example, the two closely related genera, *Iambrix* and *Idmon*, both have a long uncus, but in one the uncus tapers to a long point, in the other the uncus is deeply bifid. Accordingly, *Yania* resembles *Iambrix* and *Idmon* in male genitalia.

In the following key for separating genera of the *Ancistroides* group, I employ male genitalia as the main character. However, since the discovery of *Yania*, it is not possible to decide which vein — 2, 5, or 11 — is more

important for inferring phylogeny. For this reason, the subgroups which Eliot (1992:37) divided the group have been disregarded.

#### KEY TO THE GENERA OF THE *ANCISTROIDES* GROUP

- 1 (6) Male genitalia with uncus substantially longer than tegumen.  
(Male clasp very simple in structure. Forewing vein 11 midway between veins 10 and 12.) ..... (*Iambrix* subgroup)
- 2 (5) Forewing vein 5 midway between veins 4 and 6 at origin. Forewing vein 2 closer to vein 3 than wing base at origin. Male forewing usually without brand. Body robust.
- 3 (4) Male genitalia with uncus tapered to a long point. Underside hindwing with silvery-white spots. .... *Iambrix*
- 4 Male genitalia with uncus deeply bifid. .... *Idmon*
- 5 Both wings vein 5 slightly closer to vein 4 than 6. Forewing vein 2 closer to wing base than to vein 3 at origin. Male without brand. Body thin. .... *Yania*
- 6 Male genitalia with uncus slightly longer than tegumen.
- 7 (12) Forewing vein 11 midway between veins 10 and 12. Male clasp with cuiller not forked with harpe, or bearing a style from valva or from cuiller. .... (*Ancistroides* subgroup)
- 8 (11) Forewing vein 2 closer to wing base than to vein 3.
- 9 (10) Hindwing cell half wing length. Antennae longer than half length of forewing costa. Upperside hindwing unmarked.  
..... *Notocrypta*
- 10 Hindwing cell shorter than half the wing length. Antennae shorter than half length of forewing costa. Upperside hindwing with large white discal area. .... *Udaspes*
- 11 Forewing vein 2 closer to vein 3 than to wing base at origin.  
..... *Ancistroides*
- 12 Forewing vein 11 bowed toward or briefly touching or anastomosing with vein 12 and remote from vein 10. Male clasp with cuiller forked with harpe and without style from valva.  
..... (*Astictopterus* group)
- 13 (14) Both wings vein 5 slightly downcurved at origin, closer to vein 4 than 6. Male without secondary sex characters. Body weak.  
..... *Astictopterus*
- 14 Both wings vein 5 midway between veins 10 and 12. Males with secondary sex characters. Body robust.
- 15 (16) Forewing origin vein 4 midway between veins 3 and 5.  
..... *Koruthaialoa*
- 16 Forewing origin vein 4 closer to 5 than 3. .... *Psolos*

#### SUGGESTED PHYLOGENY

*Yania* appears to represent a mixture of all genera of the *Ancistroides* group, which I interpret to make it ancestral for the group. *Yania* shows more apparent primitive characters than any other genus in the group: structure

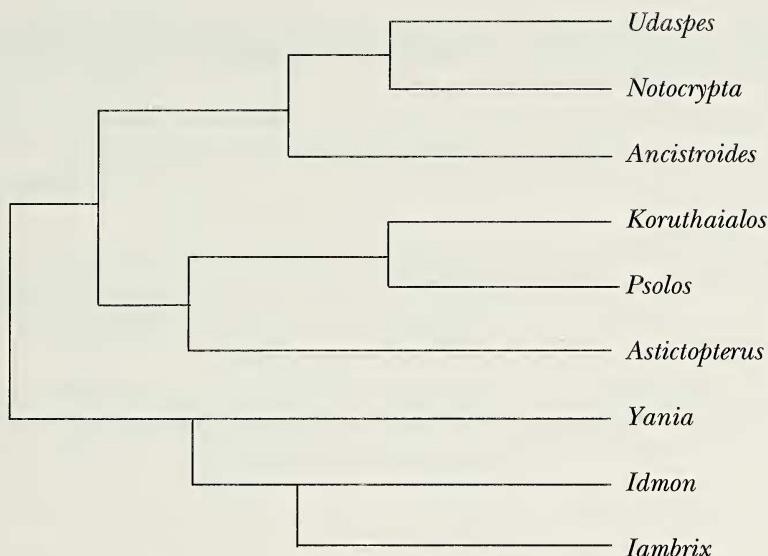


Fig. 7. Suggested phylogeny of *Ancistroides* group.

of the male genitalia is simple, veins 11 and 12 of the forewing are not joined, the antennal club is formed gradually, and secondary sex characters are absent. I lastly present the following hypothetical phylogenetic tree based on my intuitive evaluation of the selected diagnostic characters (Fig. 7).

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#### LITERATURE CITED

- CORBET, A.S. & H.M. PENDLEBURY. 1992. The butterflies of the Malay Peninsula. 3rd edition revised by J.N. ELIOT. Malay Nature Society, Kuala Lumpur.  
 EVANS, W.H. 1949. A Catalogue of the Hesperiidae from Europe, Asia, and Australia in the British Museum (N.H.). British Museum (N.H.), London.